A.D. 1861, 10th *June*. N° 1484.

Electric Telegraphs.

(This Invention received Provisional Protection only.)

PROVISIONAL SPECIFICATION left by Cromwell Fleetwood Varley at the Office of the Commissioners of Patents, with his Petition, on the 10th June 1861.

I, CROMWELL FLEETWOOD VARLEY, of No. 4, Fortess Terrace, in the County of Middlesex, Electrician, do hereby declare the nature of the said Invention for "IMPROVEMENTS IN ELECTRIC TELEGRAPHS," to be as follows:—

First, of improvements in the source of electricity or batteries.

Secondly, in preventing the escape of the electric force from the conducting wires, hence economy.

The improvement of the battery, which is a modification of my "gravity battery," patented on the 5th day of December 1854, No. 2555, consists of reducing the amount of local action and consequent waste of material; to effect this, a tube, metallic or otherwise, is placed inside a shallow metallic or conductible tray or vessel, the bottom of which is generally extended to cover the bottom of the cell. The tray is sometimes again placed in one or more trays, which are electrically connected, or the tray may contain several compartments. The tube is to receive the negative salt, and has one or more openings near its lower end to let the dissolved salt into the shallow tray or trays. The positive metal is suspended in any convenient manner over the negative metal, and in the fluid. The tube exposes only a limited portion of negative salt to the fluid, and thus checks its solution. If the negative solution fill the first tray it will overflow, and the outside of this tray and the lower plate will then come into action, and consume part of it whenever the battery is at work; in some cases a porous material is placed over the tray or compartments to act as a diaphragm, the negative salt may be mixed

or covered with gelatinous or gummy substances to retard its solution. These batteries are, in consequence, both more constant, and much more economical. The waste of electric fluid from the imperfect insulation of ordinary telegraph lines is very considerable occasioning undue consumption in the battery. The ordinary insulators are liable to cracks or flaws, and when imperfectly fired they are not non-conductors. I use very small insulators, reducing the diameter of the insulating portions as much as possible, and giving the insulator always two chances. By using a steel, iron, or other suitable pin entirely covered with vulcanized caoutchouc, vulcanite, or ebonite, if one end be imperfect, the other prevents the electricity from escaping. These pins I again generally partially cover with wood, glass, porcelain, earthenware, vulcanite, or other caps. The insulators are sometimes placed above the wires, these being suspended from them, sometimes the lower part of the insulator is attached to the support, and the wire to the upper part of the insulator.

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